THE BRITISH INFLUENCE ON AMERICAN DENTISTRY

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I WISH TO express my appreciation of the great honour accorded me by the Board of Faculty of Dental Surgery in inviting me to give this Menzies Campbell Lecture. Not only have I been delighted to give this lecture, but it has also given me the opportunity to express my respect and love for Menzies Campbell and his dear wife, Margaret.

Menzies Campbell attended the George Watson's College in Edinburgh for his early education. In 1911 he received the L.D.S. from the Royal Faculty of Physicians and Surgeons of Glasgow.

In 1912 he earned the degree of Doctor of Dental Surgery, *cum laude,* from the University of Toronto. Forty years later this same University awarded him the degree of Doctor of Laws, *honoris causa,* but because of bad health, which prevented him from travelling, he was unable to accept this great honour which could not be given *in absentia.*

In 1918 he attained the distinction of being elected a Fellow of the Royal Society of Edinburgh.

Over the years he has been made an Honorary Fellow of so many societies and academies that space limits me from enumerating them, but one I must mention for in 1958 he became the first dentist to be chosen to be an Honorary Fellow in Dental Surgery of this college, The Royal College of Surgeons of England.

He has written and lectured extensively on dental history. He is the honorary lecturer on the History of Dentistry at the University of Edinburgh.

He is the author of an excellent book, *From a Trade to a Profession*; a second edition was retitled, *Dentistry: Then and Now.*

Besides his collection of early dental instruments, appliances, pictures and portraits that he presented to the University of Edinburgh, he has given his library of early dental books and pamphlets to this College to be integrated in the College Library.

It is in his name that this Lecture is now given.

IN COLONIAL AMERICA, and in the early years following the formation of the United States, there was no formal education. As late as the first quarter of the 20th century there were those practising dentistry and medicine in America, who were licensed through years of practice by the Board of Examiners of the state in which they practised. Some had apprenticeship training but none a formal schooling.

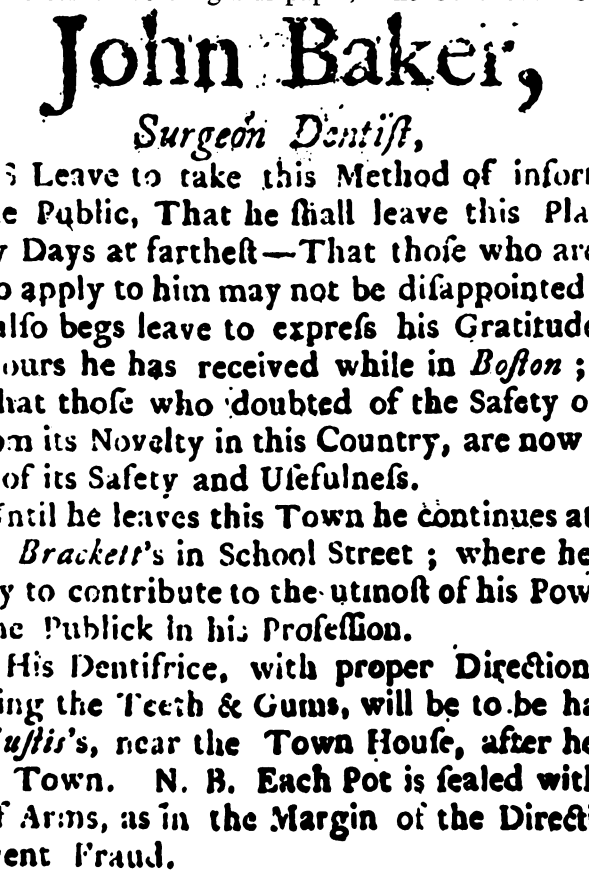
Unlike the physician, who could go abroad for his medical education and earn a degree in medicine from a university, the dentist had to fend for himself, gleaning what he could from those foreign dentists who came to our shores. There were no schools or universities in Britain that gave any dental instruction or conferred dental degrees.

The greatest British influence on the instruction of American dentists was through the books that came here in the days after the War of

Menzies Campbell Lecture delivered on 14th May 1971

(Ann. Roy. Coll. Surg. Engl. 1971, vol. 49)

Independence. There were excellent treatises written in other languages, but few in America at this time could read French or German. Kinship with Britain was close and did not cease after the revolution. By substituting 'dentistry' for 'medicine', I should like to quote Sir Walter Mercer in his delightful paper, 'The Contributions of Edin-



John Baker,

Surgeon Dentiſt,

BEGS Leave to take this Method of informing the Public, That he ſhall leave this Place in Twenty Days at fartheſt—That thoſe who are diſpoſed to apply to him may not be diſappointed.

He alſo begs leave to expreſs his Gratitude for the Favours he has received while in *Boſton*; and hopes that thoſe who doubted of the Safety of his Art, from its Novelty in this Country, are now convinced of its Safety and Uſefulneſs.

☞ Until he leaves this Town he continues at Mr. *Joſhua Brackett*'s in School Street; where he will be ready to contribute to the utmoſt of his Power to ſerve the Publick in his Profeſſion.

*** His Dentifrice, with proper Directions for preſerving the Teeth & Gums, will be to be had at Mrs. *Euſtis*'s, near the Town Houſe, after he has left the Town. N. B. Each Pot is ſealed with his Coat of Arms, as in the Margin of the Directions, to prevent Fraud.

Fig. 1. John Baker's announcement in the *Boston Evening Post* for 22nd January 1767 of his leaving Boston. Notice of the establishment of a practice or removal was placed in newspapers. At that time newspaper advertisements were not considered unethical. Note also that attention is called to the powers of his Dentifrice.

burgh to Early American Medicine'. 'Kinship, community of language and intercourse have combined to render the influence of Britain the dominant one in the development of American dentistry. This is particularly true of the colonial period and the first half of the century of the independence of the United States.' This kinship continues to-day.

The dentists who visited colonial America probably came for the

financial gain they could acquire from practice and the sale of their dentifrices and toothbrushes. They had little personal influence on the instruction of students; none except John Baker (Fig. 1) and a Dr. Petrie of Boston acted as preceptors. As a matter of fact, few of them remained long enough in one city to have indentured students. Most of them travelled over a distinct route which included Boston, New York, Philadelphia and often Williamsburg, Virginia.

Their most important influence was on the public through their newspaper advertisements, flyers and broadsheets that were generously distributed. Aside from telling the operative capabilities of the advertiser, these give-away sheets offered advice on the home care of the teeth and gums, some wrote of the care of children's teeth. This counselling helped to stimulate the interest of the public in their teeth and promoted attention to what to-day is termed oral hygiene.

The most complete broadsheet is that of John Baker. It was primarily written to advertise his 'Albion-Essence and Anti-Scorbutic Dentifrice'. but also contains excellent advice on the care of teeth and gums. A few excerpts will show the beneficial influence of a broadsheet such as Baker's.

'Directions for those who have carious teeth and bad breath;

'Lay a small quantity of the Dentifrice on the brush, so as to cover the hair, then rub the teeth and gums both on the outside and inside very well, principally upwards and downwards and little crossways. Let it remain in your mouth about two minutes, then wash your mouth with water, milk warm, and take about a large teaspoon of Albion-Essence to rinse your mouth and force it between the teeth, for it destroys the fetid matter that lodges between the interstices and carious parts of the teeth; use the Dentifrice three times a week; the Essence may be used every morning with a brush either before or after breakfast. Let none of the aliment of food remain between your teeth after eating and if the brush is not sufficient to take it out of every cavity, use a quill tooth picker and the water as before mentioned, and by adding a little of the Essence to the water it will be much better; if the gums are tender use a soft brush till the texture of the gums becomes firmer then take a harder one; in so doing you may keep carious teeth from becoming worse and preserve a sweet breath during life.'

He exhorts parents saying,

'Pray don't neglect your children's teeth when in a state of childhood, for by cleaning of them, even in tenderest state with proper medicine (his Albion-Essence and a small brush) will prevent a number of disorders. There is a very great advantage attending this practice (care of children's teeth) for if children are accustomed to take care of their teeth while young they will from habit persevere in it when they grow up and will not think it a trouble.'

How modern was his thinking and what excellent advice he gave!

No dentist really came with an established reputation. None had a famous name with the exception of the second son of the Chevalier Ruspini (Fig. 2). The younger Ruspini evidently did attempt to practise in New York City for we find his advertisement in the *Independent Journal* for 21st June 1786. He was quite young and stayed in America only a short time. It is most probable that he crossed the ocean more to promote his father's dentifrices and famous styptic than to practise.

Mr. RUSPINI,

(Son of Mr. RUSPINI, Surgeon Dentiſt, of Pall-Mall, London)

HAVING been regularly inſtructed in his Father's profeſſion by the firſt Practitioners of London and Paris, offers his ſervice to the Public, and may be conſulted at No. 34, Hanover Square, upon all complaints incident to the Teeth and Gums; and the moſt effectual method of preſerving them in a healthy and beautiful ſtate to extreme old age.

RUSPINI's Dentrifice Powder and Tincture, may be had in boxes and bottles, at 12 s. each, at his houſe, and at Meſſ. Berry and Rogers'.

Alſo RUSPINI's extraordinary *Styptic Solution*, which has been found ſo efficacious in all kinds of Hœmorrhages, or violent effuſions of blood.

This Day is Publiſhed by Mr. RIVINGTON, and Meſſ. BERRY and ROGERS,

The Eighth Edition of

A Treatiſe on the Teeth, adapted to every Capacity.

By Mr. RUSPINI.

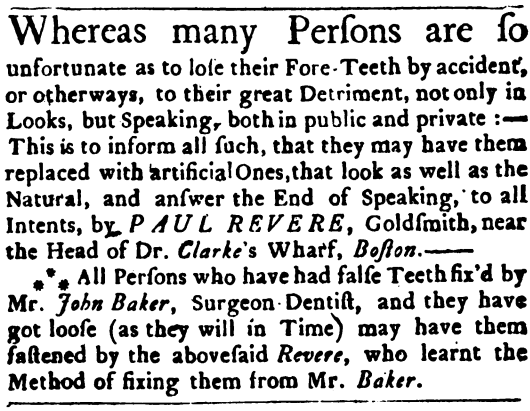
Where alſo is ſold the ſecond Edition of the Effects of the above mentioned *Styptic Solution*, atteſted by a great number of the Faculty in London. 66

Fig. 2. The advertisement of the second son of the famous Chevalier Ruspini appeared in the *Independent Journal or the General Advertiser* of New York for 21st June 1786, announcing the establishment of his practice in New York City. The most prominent part of the announcement is the advertisement of his father's Dentifrice and Styptic Solution. Also there is notice of a new edition of his father's book. (Courtesy of the New York Historical Society, New York City.)

In the advertisements in the colonial papers of Boston, New York and Philadephia the name of Jacob Hemet is frequently seen. He mentions his appointment as dentist to Queen Charlotte, Princess Amelia and the Prince of Wales, but in not one of these advertisements could I find any evidence of his practising. He simply extolled the excellent merits of his 'Essence of Pearl Dentifrice'.

There were only a few British dentists who stayed in America and exerted an influence on the practice of American dentistry. They were John Baker, Robert Cortland Skinner, Robert Woffendale and Edward Hudson.

The early background of John Baker is a mystery. He was born in England, but how he acquired his education and professional training is not known. He arrived in America in the early 1760s and started prac-



Whereas many Perſons are ſo unfortunate as to loſe their Fore-Teeth by accident, or otherways, to their great Detriment, not only in Looks, but Speaking, both in public and private :— This is to inform all ſuch, that they may have them replaced with artificial Ones, that look as well as the Natural, and anſwer the End of Speaking, to all Intents, by *PAUL REVERE*, Goldſmith, near the Head of Dr. *Clarke*'s Wharf, *Boſton*.——

*** All Perſons who have had falſe Teeth fix'd by Mr. *John Baker*, Surgeon-Dentiſt, and they have got looſe (as they will in Time) may have them faſtened by the aboveſaid *Revere*, who learnt the Method of fixing them from Mr. *Baker*.

Fig. 3. Paul Revere's first advertisement as a dentist which appeared in the *Boston Evening Post* for 26th September 1768. In this notice he mentions John Baker as his instructor.

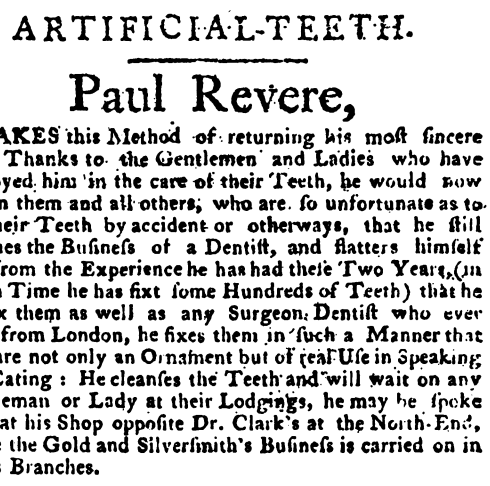
tice in Boston. Paul Revere, who is best known as a silversmith and the hero of the historic 'midnight ride', was associated with him as a pupil. How long this association existed is vague but it probably extended over several years. The proof of this pupillage is seen in Paul Revere's first advertisement as a dentist in the *Boston Evening Post* for 5th September 1768, when he stated that his methods are those he 'learned from Mr. John Baker (Fig. 3). About two years later, in another advertisement, this time in the *Boston Gazette or Country Journal* for 30th July 1770, Revere states ungratefully that he can fix teeth 'as well as any Surgeon Dentist who ever came from London' (Fig. 4).

Baker travelled the usual route of cities, finally settling in New York City. Here he purchased a considerable tract of land for, in those days, a large sum of money, showing that he had had a lucrative practice. He

no longer practised dentistry and went to live on his farm. Upon his death in 1796 this land yielded his heirs a great fortune.

Robert Cortland Skinner was a pupil of the Chevalier Ruspini and so came with an adequate training in dentistry. He was penniless on arrival and wrote to Benjamin Franklin for the loan of 20 dollars. Whether Franklin answered his plea is not known, but several months later Skinner established himself as a dentist in Philadelphia. He remained there for two years, when he moved on to New York City.

Probably remembering his days of impoverishment he extended his services gratis to the poor and his newspaper statements mention this charitable care.



ARTIFICIAL-TEETH.

Paul Revere,

TAKES this Method of returning his moſt ſincere Thanks to the Gentlemen and Ladies who have employed him in the care of their Teeth, he would now inform them and all others, who are ſo unfortunate as to loſe their Teeth by accident or otherways, that he ſtill continues the Buſineſs of a Dentiſt, and flatters himſelf that from the Experience he has had theſe Two Years, (in which Time he has fixt ſome Hundreds of Teeth) that he can fix them as well as any Surgeon Dentiſt who ever came from London, he fixes them in ſuch a Manner that they are not only an Ornament but of real Uſe in Speaking and Eating: He cleanſes the Teeth and will wait on any Gentleman or Lady at their Lodgings, he may be ſpoke with at his Shop oppoſite Dr. Clark's at the North-End, where the Gold and Silverſmith's Buſineſs is carried on in all its Branches.

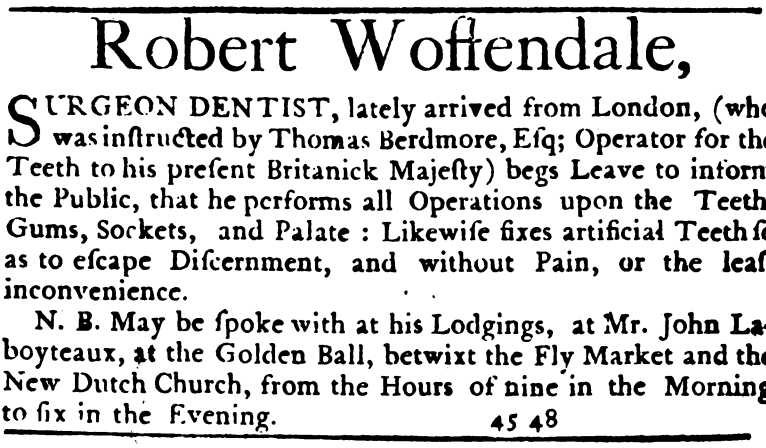
Fig. 4. Revere's announcement two years later in the *Boston Gazette* for 30th July 1770, in which appears his ungrateful statement.

When in 1791 the Dispensary of New York was founded, Skinner offered his services which were accepted and he received the appointment as Dentist to the Dispensary, thus founding the first dental clinic in a medical group in America.

In 1801 he published the first dental book printed in America. It was entitled a *Treatise on the Human Teeth.* It was a small book of 26 pages and probably was a résumé of newspaper advertisements and flyers that had been made available to the public from time to time. It briefly provided useful information both for the dental practitioner and the public. I think that Skinner meant it for the latter, for in his preface he said, 'It is put in the hands of the public for the inconsiderable sum of thirty cents.'

Skinner died in New York City in 1834 after having been in practice for 40 years.

Robert Woffendale was born in Sheffield, England, acquiring his early education there. He moved to London, where he worked for a firm of apothecaries; later he became a pupil of Thomas Berdmore, who was dentist to George III and the best known dentist in England at the time. Following his period of instruction with Berdmore he came to New York City, where he set up practice (Fig. 5). He stayed in the city about five months before going on to Philadelphia, remaining there only a short time and returning once again to New York, where he married, and a few months later sailed for England. He went back to his native Sheffield, opened an apothecary shop and practised dentistry. He re-



Robert Woffendale,

SURGEON DENTIST, lately arrived from London, (who was inſtructed by Thomas Berdmore, Eſq; Operator for the Teeth to his preſent Britanick Majeſty) begs Leave to inform the Public, that he performs all Operations upon the Teeth, Gums, Sockets, and Palate : Likewiſe fixes artificial Teeth ſo as to eſcape Diſcernment, and without Pain, or the leaſt inconvenience.

N. B. May be ſpoke with at his Lodgings, at Mr. John Laboyteaux, at the Golden Ball, betwixt the Fly Market and the New Dutch Church, from the Hours of nine in the Morning to ſix in the Evening. 45 48

Fig. 5. The first announcement of Robert Woffendale of his establishment of a practice in New York City. This appeared in the *New York Journal or General Advertiser* for 27th November 1766.

mained in Sheffield for five years and then went on to Liverpool, where he practised for the next 14 years. It was here that he wrote his most excellent book, *Practical Observations on the Human Teeth.*

After learning of Berdmore's death he visited London, where he was now free to practise for, as a term of acceptance as a pupil of Berdmore, he had given a bond that he would not practise in London, or its environs, while Berdmore was alive. In London he found a warm reception and decided to practise there. He achieved a great success and it is reported that he was tendered an appointment as dentist to the Prince of Wales, which he declined.

After five years of London practice he once more returned to New York City and re-established himself as a dentist. Later he turned the

practice over to his oldest son while he went to his farm on Long Island, where he died in 1828.

Woffendale was held in high esteem in New York City. Horace Hayden, one of the foremost dental educators of his time, in a presidential address before the American Society of Dental Surgeons, in tracing the development of dentistry, credits Woffendale with advancing the usefulness and respectability of the profession.

Edward Hudson was born in County Wexford, Ireland, and was the most cultured and best educated of the dentists who came to America. He was educated at Trinity College in Dublin and was trained in dentistry by a cousin who was one of the prominent dentists of Dublin.

Because of political activity he and 22 members of the Society of Irishmen were arrested and imprisoned in St. George in Scotland. While in prison he was allowed to practise and treated the nobility and gentry of the surrounding countryside, receiving large fees for his excellent services. Four years later he was freed and exiled to Holland, whence he set sail for the United States. He went into practice in Philadelphia and followed his profession there for 30 years.

He was extremely skilful and is credited with being a pioneer in filling root-canals. Burton Lee Thorpe, in Koch's *History of Dental Surgery*, wrote, 'For more than thirty years Dr. Hudson was a recognized leader of his profession: his talent and skill was an important accession to American dentistry . . .'

The University of Pennsylvania conferred upon him the honorary degree of Doctor of Medicine.

With greater facility in travelling following the end of hostilities and with the return of cordial relationship between the mother country and the United States, a number of dentists went abroad to improve their education. They were warmly received in England and offered every opportunity to learn and were welcome to practise. Prominent among these dentists were Josiah Flagg, Eleazar Gidney and the brothers Levi S. and Eleazar Parmly.

I mention Josiah Flagg, not because he went voluntarily to London, but because he was an example of the generosity extended to American dentists, even though they were, for the time, enemies.

Josiah Flagg practised dentistry in Boston and was one of the few dentists of his time that performed oral surgical operations. An advertisement states that he '. . . sews up hare lips and fixes gold roofs and palates, greatly assisting the pronunciation and the swallow'.

Flagg enlisted in the navy in the War of 1812 and was captured and taken to England as a prisoner of war. He was paroled and was magnanimously allowed to practise in London. Here he made the

acquaintance of Sir Astley Paston Cooper and Joseph Fox. In order to improve his surgical knowledge he attended the lectures and clinics of Sir Astley and other medical teachers at Guy's Hospital.

He returned to America but, shortly before landing, his ship was wrecked off New York harbour. He was rescued and went to Boston debilitated from exposure and died shortly after, unable to impart to his colleagues and patients the fruits of his London studies.

Eleazar Gidney was born in New York State and was licensed to practise physic and surgery through examination. He soon became interested in dentistry after reading the books of Thomas Bell, John Hunter and Thomas Berdmore. To perfect himself in his profession he travelled widely in Europe, returning to America to practise in a number of cities. He finally revisited England and settled in Manchester, where he practised for many years. He was well thought of in his own country, and when the American Society of Dental Surgeons was formed he was elected an honorary member together with such distinguished dental surgeons as Thomas Bell, Samuel Cartwright and Alexander Nasmyth.

During his travels Gidney collected a large number of dental books and portraits. When the *American Journal of Dental Science* was founded, he generously gave his library to the publishing committee; this library found its way to the Baltimore College of Dental Surgery.

Levi Spear Parmly was born in Braintree, Vermont. He went to Boston and was apprenticed to a Dr. Petrie, an English dentist who was practising temporarily in the United States. Just who Dr. Petrie was and where he came from in England I have not been able to find out. Parmly left Dr. Petrie to become associated with Dr. John Randall, an eminent dentist of Boston.

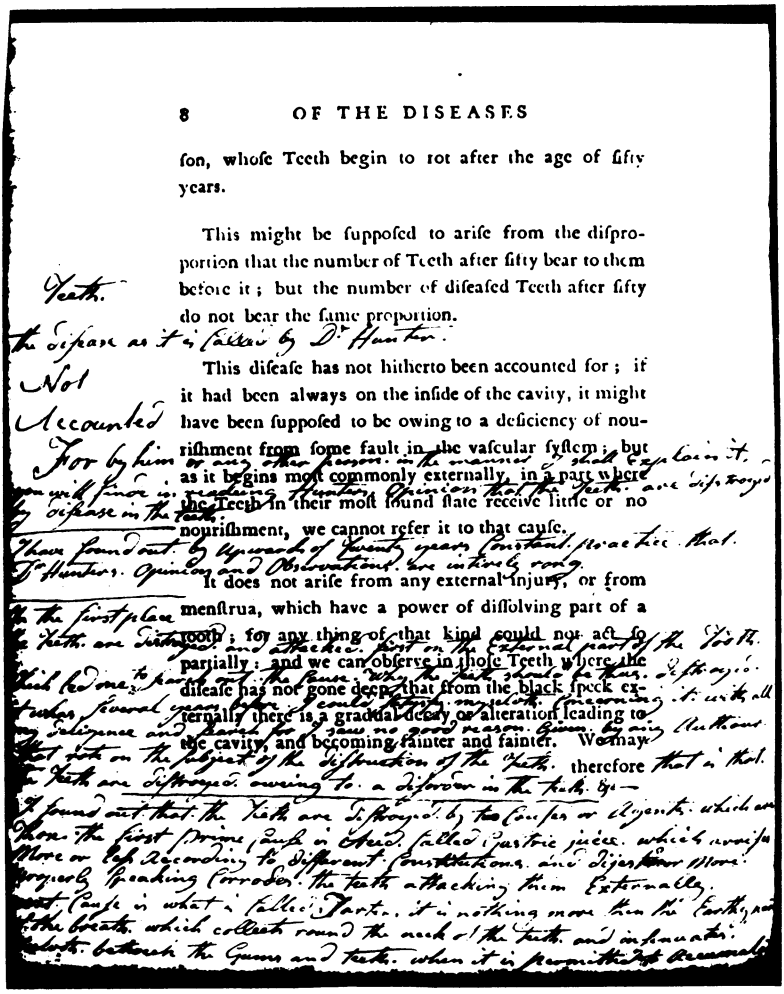
Levi undertook the instruction of his brother Eleazar, who was eight years his junior. Together they toured the southern states picking up whatever knowledge they could from other itinerant dentists. Levi finally settled in New Orleans but, feeling the need of more knowledge, went to London to join his brother, who had preceded him there. After five years in London, Levi returned to New Orleans, where he followed his profession for 28 years.

Eleazar Parmly was also born in Braintree, Vermont, and was, as we have noted, the pupil of his brother Levi. In travels throughout the country he saw patients of George Waite of London and Dr. Edward Hudson, formerly of Ireland, now of Philadephia. The work he saw of the British dentists inspired him to go to London for advanced training and the improvement of his knowledge.

He called upon the leaders of the dental profession and they received him warmly and talked to him freely. He had the opportunity of watching the best operators, of whom he thought George Waite the most

skilful, especially in the perfection of his gold fillings. Eventually he went into practice and was later joined by his brother Levi.

He acquired a large practice and became the personal friend of



8 OF THE DISEASES

ſon, whoſe Teeth begin to rot after the age of fifty years.

This might be ſuppoſed to ariſe from the diſproportion that the number of Teeth after fifty bear to them before it; but the number of diſeaſed Teeth after fifty do not bear the ſame proportion.

This diſeaſe has not hitherto been accounted for; if it had been always on the inſide of the cavity, it might have been ſuppoſed to be owing to a deficiency of nouriſhment from ſome fault in the vaſcular ſyſtem; but as it begins moſt commonly externally, in a part where the Teeth in their moſt found ſtate receive little or no nouriſhment, we cannot refer it to that cauſe.

It does not ariſe from any external injury, or from menſtrua, which have a power of diſſolving part of a tooth; for any thing of that kind could not act ſo partially: and we can obſerve in thoſe Teeth where the diſeaſe has not gone deep, that from the black ſpeck externally there is a gradual decay or alteration leading to the cavity, and becoming fainter and fainter. We may therefore

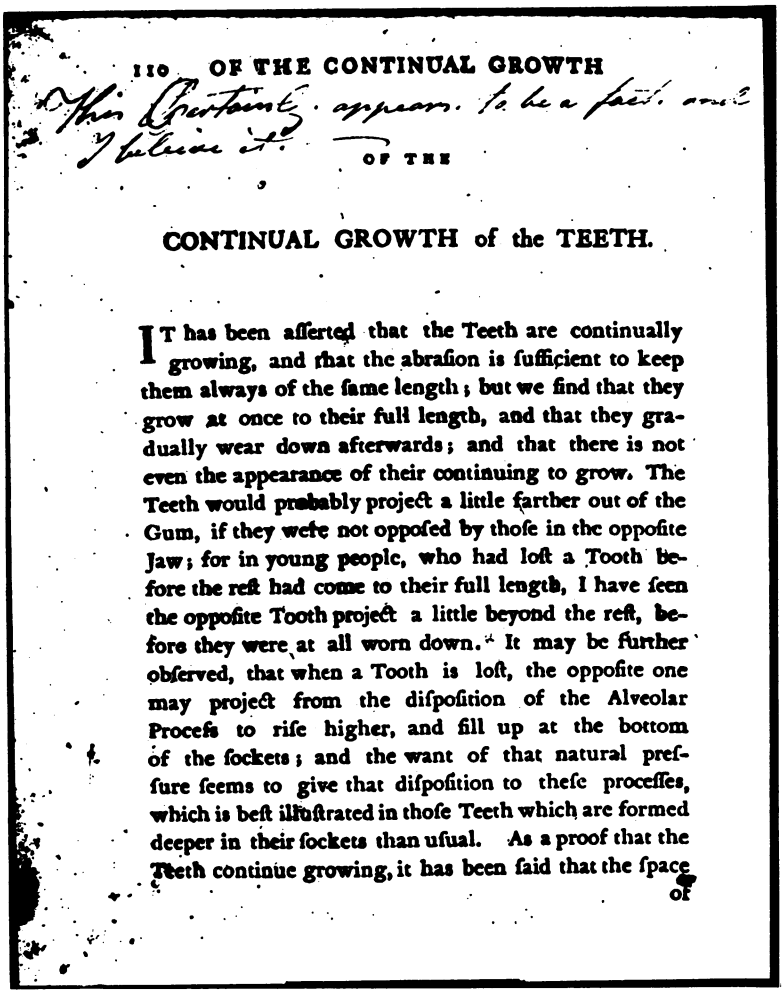
Fig. 6. John Greenwood's copy of John Hunter's books, now the property of the New York Academy of Medicine. The Supplement, *A Practical Treatise on Diseases of the Teeth*, was the copy that was most thoroughly annotated. On this page one can decipher Greenwood's almost vehement disagreement with Hunter and expresses his own erroneous views.

Sir Astley Paston Cooper, Anthony Carlisle, Mathew Baillie and Sir Benjamin West, the President of the Royal Academy.

He returned to America and settled in New York City. For over 30

years he was a leader in his profession in the United States. He wrote extensively and edited John Hunter's *Treatise and Supplement.*

In the first half of the 19th century the greatest influence of Britain on American dental education, particularly in the basic sciences, was



110 OF THE CONTINUAL GROWTH

This Certainty appears to be a fact and I believe it

OF THE

CONTINUAL GROWTH of the TEETH.

IT has been aſſerted that the Teeth are continually growing, and that the abraſion is ſufficient to keep them always of the ſame length; but we find that they grow at once to their full length, and that they gradually wear down afterwards; and that there is not even the appearance of their continuing to grow. The Teeth would probably project a little farther out of the Gum, if they were not oppoſed by thoſe in the oppoſite Jaw; for in young people, who had loſt a Tooth before the reſt had come to their full length, I have ſeen the oppoſite Tooth project a little beyond the reſt, before they were at all worn down. It may be further obſerved, that when a Tooth is loſt, the oppoſite one may project from the diſpoſition of the Alveolar Proceſs to riſe higher, and fill up at the bottom of the ſockets; and the want of that natural preſſure ſeems to give that diſpoſition to theſe proceſſes, which is beſt illuſtrated in thoſe Teeth which are formed deeper in their ſockets than uſual. As a proof that the Teeth continue growing, it has been ſaid that the ſpace

of

Fig. 7. On this page Greenwood was in agreement with Hunter.

through the books that came to our shores. These were supplemented later by articles and essays appearing in journals and transactions.

The number of dental books published in Britain in the 18th cenutry was negligible. Copies of the books of Thomas Berdmore and Robert Woffendale were scarce in the colonies.

It must also be realized that Hunter's volumes were published during the troublous times of the War of Independence, for the *Natural History of the Human Teeth* came out in 1771: the supplement, *A Practical Treatise on Diseases of the Teeth* in 1778. Very few copies found their way to America at this time, those that did were probably brought over by physicians who had gone to Edinburgh or London for advanced medical education. One of these rare copies is still in existence. It belonged to John Greenwood, the foremost dentist in New York City and the dentist of George Washington. Greenwood made for the poor suffering General the last and most satisfactory of his numerous dentures. This was of swaged gold to which hippopotamus teeth, carved to simulate human teeth, were attached. John Greenwood worked through Hunter's books with great care, making copious annotations (Figs. 6 and 7). His notes express both praise and criticism. Horace Hayden was a pupil of Greenwood and undoubtedly made use of Hunter's books in his studies.

As an anatomist, physiologist, pathologist and experimentalist, Hunter for his time had no peer. He applied his talents to the study of the teeth and jaws and his books on his observations opened up a new vista to the study of the oral cavity.

The books, aside from Hunter's, that made the greatest imprint were: Joseph Fox's *Natural History of the Human Teeth,* particularly the second and third posthumous editions; Thomas Bell's *Anatomy and Physiology and Diseases of the Teeth*; Robert Blake's *Essay on the Structure and Formation of the Teeth in Man and Various Animals*; William Robertson's *Treatise on the Human Teeth* and Alexander Nasmyth's *Researches on the Development, Structure and Diseases of the Teeth.*

Since these books came over in too small numbers to meet the demand for them, they were quickly reprinted by American publishers. These books acted as the sole texts of instruction, for dental books by American authors came out quite late in the 19th century.

It is interesting to see how well these books were studied for, in leafing through a number of them, we see on the margins of the pages drawings of arrows or pointed fingers directing attention to a pertinent paragraph or statement (Fig. 8).

To its everlasting praise, the *American Journal of Dental Science* republished the Berdmore, not for its instructive value, but as a dental classic. It also republished the works of Nasmyth, Blake and Hunter, the last being edited by Eleazar Parmly, who by means of footnotes brought the books up to the current time.

The third edition of Fox was reprinted and edited by Chapin A. Harris, again with notes bringing it up to date. Harris, together with

But all this is flatly contradicted by the next writer, Blandin, who maintains that all that has been advanced on the other side of the question is marked "au coin de la plus pure hypothèse."

Mr. Tomes, the latest labourer in this field of inquiry—the author of an excellent paper in the Medical Gazette, No. 585—adopts the conclusion, that "of the several parts which have been treated of, all, save the enamel, are vascular, and he would not deny even to this all connexion with the circulating fluids."

Thus on each side we have writers of equal authority; and the points at issue remain altogether unsettled by any positive anatomical demonstration, although they are of great practical importance, and so prominent as to demand the active scrutiny of the student of nature.

In short, the impression left on the mind of the student, after having perused the works which have been published in this department of science is, that almost every point requires to be investigated anew.

How various and contradictory are the opinions of writers on the composition and structure of the teeth! Hippocrates taught that they were composed of *hardened fat*. Leeuwenhoek was the first who stated that their structure is *tubular*, and this doctrine, after having been forgotten for one hundred and sixty years, has lately reappeared in a most attractive garb. Monro believed that these organs are *longitudinally fibrous:* Fox, that they were *deposited in layers*. G. Cuvier says, "that they are *neither cellular* nor *fibrous*, but composed of *laminæ*." Bichat held that they were analogous to *rock*, and *fibrous;* Serres, on the other hand, sees *nothing like fibres* in them. Rousseau describes their structure as being *longitudinally striated*. Blandin, who wrote so late as

Fig. 8. This is a page from Alexander Nasmyth's *Researches on the Development, Structure and Diseases of the Teeth*. The marginal markings are evidence of the intense study this book was given. Such attention to the text was not uncommon in many of the books.

Horace Hayden, were the founders of the Baltimore College of Dental Surgery.

It can truly be said that no educated dentist, at least in the first half of the 19th century, had not been influenced by these British writings.

Later, when the various transactions came across the ocean, students became acquainted with the histological discoveries of John Tomes. His communications describing the fibril in the dentinal tubule and the minute spaces in the dentine immediately under the cementum, have made the eponyms, 'Tomes Fibre' and the 'Granular layer of Tomes' known to every American dental student. In 1859 Tomes's *Dental Surgery* appeared, adding another important influence on early American dental education.

Much of the foundation of what we, in America, have come to call 'Oral Medicine' was laid by British doctors. We accept their descriptions as commonplace and forget the men who contributed greatly to our special field of dentistry. The outstanding ones who come to mind are: Sir Jonathan Hutchinson, Sir James Paget, Sir Henry Butlin, Erasmus Wilson and Henry Burton.

Sir Jonathan Hutchinson is best known to dental surgeons for his description of the defective teeth caused by inherited syphilis, a sign known as 'Hutchinson's Teeth'. He emphasized the fact that the central upper incisors of the permanent dentition were the truly stigmatized teeth and he carefully differentiated these teeth from those whose defects were due to other causes of maldevelopment.

He wrote a small book *Syphilis* which had a wide audience in America. A second edition of this book came out in 1913, the year of Hutchinson's death. In this book the chapter on the recognition of the inherited taint describes the triad of the typical teeth, otitis and deafness and interstitial keratitis, known as 'Hutchinson's Triad'. He also called attention to the facies of the congenitial syphilitic with his saddle back nose, linear marking radiating from the angles of the mouth, squareness of the head and bossing of the frontal bones.

These signs of the inherited taint mean little to the present generation of physicians and dentists for it seemed that the scourge of syphilis had been eliminated. Unfortunately, now the contraceptive pill and sexual permissiveness has resulted in a great upsurge of cases of venereal disease. Once more, at any rate on our side of the Atlantic, Hutchinson's teachings will have to be restudied.

He was very interested in the diseases of the mouth and, besides a number of reports on oral tumours and other lesions, he wrote two papers emphasizing this interest. One was 'A Surgeon's Notes on Certain Diseases and Malformations of the Teeth' and the other 'Surgical Diagnosis by the Teeth'.

All who are interested in affections of the bones of the face and jaws

owe a debt of gratitude to Sir James Paget for calling attention to a disease that bears his name. The cause of this mischief is as obscure to-day as it was on the evening of 16th November 1876 when he read his famous communication, 'On a Form of Chronic Inflammation of Bones (Osteitis Deformans)'. Nobody has improved on Paget's original description of the disease.

Paget's disease of bone is not too rare and it should always be suspected in all cases of atypical facial neuralgia and when the X-ray picture discloses diffuse bulbous enlargement of the roots of the teeth as well as significant changes in the jaw bones.

What a pity Paget had not lived long enough to see the Roentgen pictures of the disease he so graphically described clinically, for he died shortly after Roentgen's great discovery.

The man who made the histological examination of the bones of Paget's cases was Henry T. Butlin, who later became a famous surgeon and the author of the medical classic, *Diseases of the Tongue*. This book was also favourably received in America.

It was Butlin who described the condition he termed the 'smoker's patch' and gave the name 'wandering rash' to that migratory lesion of the tongue frequently referred to as 'geographic tongue'. His description of leukoplakia of the dorsum of the tongue is an artistic word picture.

Erasmus Wilson must be mentioned, for it was he who first noted that lichen planus could be found on the oral mucous membrane.

Henry Burton described the blue line in the gums due to lead intoxication, 'The Burtonian Line'. Just as syphilis was thought to have disappeared so it was also believed that lead poisoning had left the scene; and just as syphilis has reappeared and its stigmata and symptoms must be relearned, so has lead intoxication returned, especially among the children of the slums who eat the paint that falls from the old walls. The Burtonian line may become once again a diagnostic sign.

It would be remiss if I left out two other distinguished Britons whose investigations aided the dental surgeon as well as the physician. One was John Fothergill, who first accurately described in English the symptoms and differential diagnosis of major trigeminal neuralgia or tic douloureux. In America we should be most grateful to Fothergill, not only for his scientific contributions, but for helping to found the Pennsylvania Hospital to which he gave large sums of money, specimens and drawings, and for his aid in establishing the first medical school in America.

Sir Charles Bell is appreciated for his researches in separating the function of the fifth and seventh cranial nerves and for his description of the paralysis of the seventh nerve, known to all as 'Bell's Palsy'.

In the first quarter of the 20th century probably the greatest influence a Briton had on altering the course of practice of American dentistry

was that of William Hunter, when he suggested that 'oral sepsis' (a term he coined) was a prime factor in producing systemic disease. He specifically accused the American type of dentistry as not only producing septic conditions in the mouth, but of building restorations on septic foundations. His crowning effort was in his famous paper delivered in Canada in 1912, when he accused the American dentist of building 'mausoleums of gold over a mass of sepsis'. The focal infection theory soon became a rage. Pulpless teeth were indiscriminately removed at the slightest suggestion of vague systemic symptoms. In time the furore quieted and, while a dreadful amount of dental mayhem was practised by unthinking men, nevertheless much good came from Hunter's accusations. Methods were devised for preventing dental infections and curing them when they occurred. Root canal therapy became an important skill with the specialty of endodontics evolving. The prevention and treatment of periodontal disease brought about another specialty, periodontics. Above all the patient has been taught the value of oral hygiene and of regular periodic dental examinations.

The conservative dentist and the prosthodontist have learned to build on a sound and healthy foundation and along anatomical and physiological lines.

And so, in this limited essay, I have tried to show the British influence on the formative days of early American dentistry, an influence that still prevails.